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In the Claims:

1-47. (Previously Cancelled)

48. (Previously presented and currently amended) A reactor for the plasma assisted processing of a gaseous medium, said reactor including a pair of electrodes having facing surfaces and spaced from each other for providing a separation therebetween, said separation of said facing surfaces being substantially uniform and defining a space between said pair of electrodes, a body of dielectric material positioned for providing a dielectric barrier between said pair of electrodes and configured for dividing said space between said pair of electrodes into a plurality of gas passages, said gas passages providing a plasma volume for said reactor, said gas passages having lengths along which gas flows during use of said reactor, said gas passages being aligned so that said lengths extend between and in a direction parallel with said facing surfaces of said pair of electrodes, said gas passages being spaced apart from one another in a direction ~~transverse~~ perpendicular to the said facing surfaces, said gas passages including a pair of opposed sides having a contour which matches ~~a~~ the contour of said facing surfaces of said pair of electrodes, said shape and spacing of said gas passages providing for a substantially uniform distribution of electric field across said plasma volume between said pair of electrodes, wherein said pair of electrodes are embedded in said body of dielectric material which extends across the space between said pair of electrodes, said plurality of gas passages extending longitudinally of said body of dielectric material to provide said plurality of electrically equivalent plasma volumes extending in series across said space between said pair of electrodes.

49. (Cancelled)

50. (Previously presented) A reactor according to claim 48, wherein said dielectric material is selected from the group consisting of alpha or gamma aluminas, cordierite, mullite, alumina silicate ceramics, silicon carbide, micaceous glass or mixtures of these.

51. (Previously presented) A reactor according to claim 48, wherein the gas passages have surfaces which present a catalytically active surface to gaseous medium passing through said gas passages.

52. (Previously presented) A reactor according to claim 51, wherein the said surfaces of said gas passages are coated, impregnated or treated by ion-exchange or doping, with a catalytically-active material.

53. (Previously presented and currently amended) A reactor according to claim 51 in combination with a internal combustion engine for treating exhaust therefrom, wherein said catalytically active surface is catalytically active towards the reduction of the emissions of one or more of nitrogenous oxides, particulate including carbonaceous particulate, hydrocarbons including polyaromatic hydrocarbons, carbon monoxide and other regulated or unregulated combustion products contained in said exhaust of said internal combustion engines.

54. (Previously presented and currently amended) A reactor according to claim 52 wherein said catalytically-active material is selected from the group consisting of alpha and gamma aluminas and mixtures thereof, ferroelectric materials, titanates, barium titanate, titania, anatase phase titania, zirconia, vanadia, silver aluminate, perovskites including layered perovskites and

La_2CuO_4, $La_{1.9}K_{0.1}Cu_{0.95}V_{0.05}O_4$ and $La_{0.9}K_{0.1}CoO_3$, spinels, metal-doped and metal oxide-doped or exchanged inorganic oxides, cobalt oxide-doped alumina, vanadates, potassium metavanadate, caesium metavanadate, pyrovanadates, potassium pyrovanadate, caesium pyrovanadate, metal-doped zeolites, zeolites of ZSM-5, Y, beta, mordenite all of which zeolites may contain iron, cobalt or copper with or without additional catalyst promoting cations including cerium and lanthanum and alkali metal containing zeolites in particular sodium-Y zeolites and mixtures of any of these materials.

55. (Previously presented) A reactor according to claim 48, wherein said gas passages contain a gas permeable body of an insulating filling material.

56. (Previously presented) A reactor according to claim 55, wherein said insulating filling material comprises a dielectric material.

57. (Previously presented) A reactor according to claim 56, wherein said dielectric material is a catalytically active material.

58. (Previously presented) A reactor according to claim 56, wherein said dielectric material is coated, impregnated or otherwise treated with a catalytically active material.

59. (Previously presented) A reactor according to claim 56, wherein said dielectric material develops catalytically active properties by virtue of exposure to plasma in said gas passages.

60. (Previously presented) A reactor according to claim 48,

wherein said pair of electrodes are planar and said gas passages have a generally rectangular cross-section with major transverse dimensions parallel to those of said facing surfaces of said pair of electrodes.

61. (Previously presented) A reactor according to claim 48, wherein said pair of electrodes are in the form of two concentric cylinders and said gas passages comprise a plurality of regularly spaced slots of cylindrical form.

62. (Previously presented) A reactor according to claim 48 in combination with a power supply for applying a voltage to said reactor, wherein said gas passages are arranged such that a potential drop across said plasma volume between said pair of electrodes is equal to approximately half said voltage applied to said reactor.

63. (Previously presented) A reactor according to claim 62, wherein said power supply for the reactor is provided by an integrated starter alternator damper system.

64. (Previously presented) A reactor according to claim 48, wherein an electrical-generating power supply for said reactor is selected from the group consisting of fuel cells, gas turbines, solar cells and heat exchangers.

65. (Previously presented) A reactor according to claim 48 incorporated as part of an emissions control system.

66. (Previously presented) A reactor according to claim 65, wherein said emissions control system is used in conjunction with an engine management system.

67. (Previously presented) A reactor according to claim 65, wherein said emissions control system includes an additional gas passage outside of said plasma region of the reactor in series with the aforesaid gas passages, said additional gas passage containing gas permeable catalytically active material.